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## PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

## An Ankle Joint for use in connection with an Artificial Foot

We, J. E. HANGER AND COMPANY LIMITED, a British Company, of Roehampton House, Roehampton, London, S.W.15, THOMAS BRYANT SMITH,

5 FREDERICK JOHN WALKER and PERCY BROWN, British Subjects, all of the Company's address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to an artificial limb including an ankle joint, the main object of the invention being the provision of a joint which allows of the required movement in two directions, namely a backward or forward movement and a lateral one which, in combination, result in a universal movement, and which shall be readily dismantled, as, for example, when it is desired to renew the usual instep or heel rubbers.

It has previously been proposed to construct such an ankle joint with two joint members formed integrally with and arranged at right angles to each other, one joint permitting of backward and forward movement of the foot, and the other joint permitting of lateral movement of the foot, and one of the two joint members being mounted in lugs secured to the shin portion whilst the other joint is mounted in a member adapted to be secured to the foot portion.

35 According to the present invention one of the joint members is mounted in lugs which are so constructed as to act as stops for the purpose of limiting the amount of lateral movement in the joint, whilst the other joint member is attached to lugs formed on a single screw-threaded bolt extending downwardly through the foot.

One form of construction of the invention is illustrated in the accompanying drawings, in which:—

Fig. 1 is a sectional elevation, and

Fig. 2 is a section on the line 2—2 of Fig. 1.

In these drawings, *a* represents a portion of a shin and *b* is the foot. The latter is provided, as usual, with a rubber spring *c* at the toe joint, a rubber instep pad *d* and a rubber heel spring *e*. The foot is

also provided with a flexible insertion *f* which acts as a toe hinge. 55

The joint, which is secured to the shin portion *a*, comprises an upper spindle *g* and a lower spindle *h*, both mounted in ball or other anti-friction bearings. The two spindles are arranged at right angles, or substantially so, to one another, the spindle *g* facilitating backward and forward movements of the foot, and the spindle *h* facilitating lateral movements. The spindle *g* is mounted in two lugs *j* integral with and extending downwardly from the member *a*. These lugs bear against buffers in the form of projections *k* mounted in the foot *b*. 60

The lower spindle *h*, the housing of which is integral with the housing of the spindle *g*, is mounted in lugs *l* integral with a base piece *m*. A screw-threaded bolt *n* extends downwardly from the part *m*, and is adapted to engage a conical nut *o* housed in an opening in the base of the foot. If the nut be released from the bolt the whole joint can be lifted out of the foot. 70

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:— 80

An artificial limb including an ankle joint comprising two joint members formed integrally with and arranged at right angles, or substantially so, to each other, one joint permitting of backward and forward movement of the foot, and the other joint permitting of lateral movement of the foot, one of the two joint members being mounted in lugs secured to the shin portion, the said lugs being so constructed as to act as stops for the purpose of limiting the amount of lateral movement in the joint, and the other joint member being attached to lugs formed on a single screw-threaded bolt extending downwardly through the foot. 85 90 95 100

Dated this 25th day of April, 1939.

ABEL & IMRAY,

Agents for the Applicants,  
30, Southampton Buildings, London,  
W.C.2.

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[This Drawing is a reproduction of the Original on a reduced scale.]

FIG. 1.

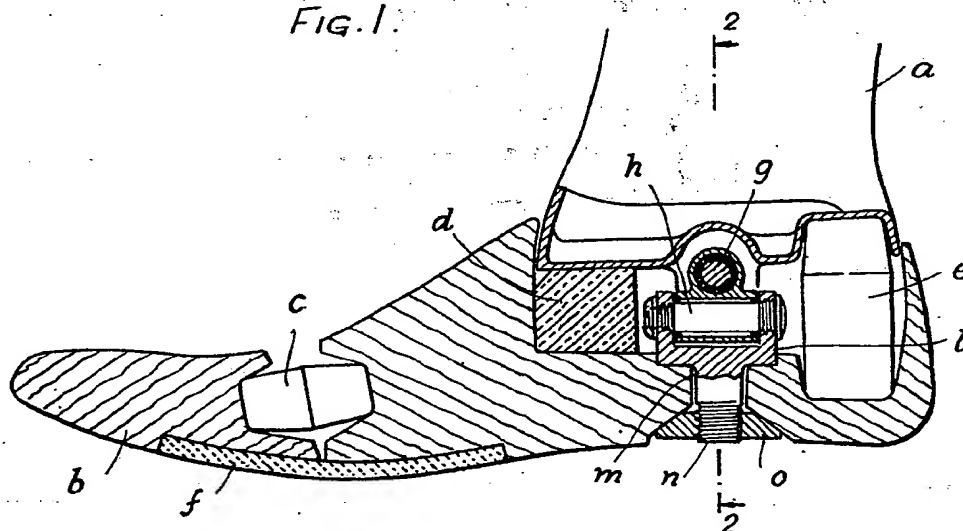


FIG. 2.

